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(19) (CA) **CANADIAN PATENT** (12)

(54) Lacrosse Head

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No. OF CLAIMS 11

Canada

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1 LACROSSE HEAD

Background of the Invention

5 A variety of lacrosse stick frame members or
heads are known for use in lacrosse play all under rules and
specifications set forth by the United States Intercollegiate
Lacrosse Association Rules Committee. Such lacrosse stick heads
are often made in a generally triangular form with straight
sidewalls extending along an elongated axis of the head between
10 a transverse head member and throat to provide a ball pocket
area of substantially uniformly diminishing width toward the
throat portion.

Various methods have been proposed to increase
accuracy and velocity of a thrown lacrosse ball. It is known
15 that strictly rectangular four-inch wide frame lacrosse heads
used in Canadian lacrosse are particularly accurate in placement
of thrown balls. However, restrictions set by the Rules
Committee prohibits certain constructions. For example,
restrictions include the transversely disposed section of the
20 lacrosse racket frame, commonly referred to as the "head", being
required to have an inside dimension of between six and
three-quarters and twelve inches. The frame is generally
required to have an elongated length of approximately twelve to



1 eight inches from the right angle end of the lip to the
handle. The wall sections are often required not to be over two
inches from front to back dimension with the net or pocket of
the stringing having a pocket sag such that the top surface of a
5 lacrosse ball placed in the pocket will not drop below the
bottom edge of the sidewalls with the ball itself having a
circumference of between about seven and three-quarters inch and
eight inches with a weight of from about five ounces to five and
a half ounces and a diameter of about one and three-quarter
10 inch.

Restrictions on frame design have been a major
reason in limiting the velocity and accuracy of balls thrown
from frames.

Summary of the Invention

15 According to the invention a lacrosse stick frame
encircles a net area and extends along a central elongated
axis. A lip member extends transverse to the central axis and a
throat is positioned opposite to the lip member. First and
second opposed sidewall members extend between the lip and
20 throat to form the encircling frame. The first and second
sidewall members define therebetween a first area having a first
width and second area positioned toward said throat and having a
width less than said first width with the second width being
selected to snugly receive a lacrosse ball therebetween so as to
25 permit positive positioning of the ball with respect to the
sidewall members. This positive positioning at an area between
the sidewalls substantially only millimeters wider than the ball
itself improves the throwing characteristics of the ball so as
to improve velocity and accuracy of thrown balls thrown from the
30 frame.

Preferably the sidewall members are pinched in
toward each other to form the first and second areas.

In the preferred form, tabs are provided for
locating the stringing and extend substantially in a plane at

1 the back of the frame.

Preferably the throat provides a single hole on either side of the stick attachment to the throat with outer leather thongs of the netting being located in these holes and
5 the inner leather thongs being wrapped around the head to provide for increased tension on the outer thongs to result in a pocket that aids in propelling the ball with greater velocity.

It is an object of this invention to provide a lacrosse stick frame which enhances throwing characteristics of lacrosse
10 balls thrown from the frame.

It is another object of this invention to provide a frame in accordance with the preceding object having pinched in sidewall members providing an area closely surrounding sides of a lacrosse ball held within the frame for propelling the ball at
15 enhanced velocity with high accuracy.

Still another object of this invention is to provide a lacrosse stick frame in accordance with the preceding objects which can be formed with dimensions of overall length and width not exceeding previously acceptable dimensions.

20 It is a feature of this invention that the sidewall construction provides a substantially conventional lacrosse stick head with an improvement requiring only a portion of the head to be modified. That modified portion provides lateral support and positioning to a lacrosse stick ball thereby
26 enhancing the velocity and accuracy with which the ball can be propelled from a lacrosse stick by the user.

Brief Description of the Drawings

The above and other objects, features and advantages of the present invention will be better understood from a reading of
30 the following specification in conjunction with the drawings in which:

FIG. 1 is a front view of lacrosse stick head with attached handle in accordance with a preferred embodiment of the present invention;

1 FIG. 2 is a right side view thereof through line 2-2;
 FIG. 3 is an enlarged front view thereof; and
 FIG. 4 is a cross sectional view taken through line 4-4 of
FIG. 3; and,
5 FIG. 5 is a cross sectional view taken through line 5-5 of
FIG. 4.

Description of Preferred Embodiments

 With reference now to the drawings, a preferred embodiment of
a lacrosse stick is shown generally at 10 having an improved
10 encircling frame of this invention illustrated generally at 11.
The frame has a lip member 12 transverse to an elongated axis 13 of
the encircling frame. A throat portion 14 is opposite to the lip
member 12. First and second opposed sidewall members 15 and 16
extend between the lip and throat to form the encircling frame.

15 The material of the frame member can be any known lacrosse
racket frame materials including wood and polymer materials.
Preferably ionomer polymers such as Surlyn A, manufactured by E.I.
DuPont de Nemours Co., Inc. of Wilmington, Delaware or other such
tough resilient polymeric material is used. The frame is
20 preferably integral and forms a continuous encirclement for the
netting or lacing 20 which is mounted within the frame.

 A conventional lacrosse stick handle 21 can be mounted within
the butt end of throat 14 as known in the art.

 The overall dimensions of the frame are preferably within the
25 Lacrosse Rules Committee requirements. Thus the frame preferably
has an elongated length of approximately twelve inches. The wall
sections are approximately one and three-quarters inches from front
surface 30 to rear surface 31. The transverse lip or head member
12 has a transverse inside dimension of about six and
30 three-quarters inches.

 The lip transverse member 12 is preferably tilted slightly to
the rear as best shown in FIGS. 2 and 4. The lip is preferably
provided with a plurality of holes 22 and inwardly directing sets

1 of tabs 23, 24, 33, 35 and 34, 36, for mounting the netting 20.
The sidewalls 15 and 16 extend from the lip end to the throat as
is customary but are pinched in as at portions 31 and 32 to
provide an area below locking tabs 33-36 which is restricted in
5 transverse dimension as will be described.

The locking tabs 33-36 extend inwardly and act to provide
mountings for locating the pocket of the lacrosse stick frame.
These tabs can be as described in United States Patent 4,138,111
issued February 6, 1979. Preferably the locking tabs extend
10 only at the upper end of the frame which defines a first area
wider than the second area below the locking tabs toward the
throat. In some cases, the locking tabs can be eliminated while
the advantages of the pinched in sidewalls can still be
obtained.

15 The throat portion of the frame enables mounting of the
handle or stick 21 in a conventional recess with a locking screw
as known in the art. The netting is mounted about the throat
and preferably through two holes 37 and 38. This differs from
the standard prior art where a plurality of holes are used on
20 either side of the handle extending along the handle axis with
the stringing being mounted in those holes. The differences
will be described with respect to the netting.

By using only one hole on either side of the throat
portion, that portion can be abbreviated in axial length. Thus
25 the hand of the user can grip the head closer to the ball rest
position at the base of the throat. As best seen in FIG. 3 the
ball 60 rests in the ball stop 45 at the base of the throat and
substantially at the throat end 61. This throat end 61 is
preferably located so that the hand can grip the handle and
throat in a plane shown by the dotted line 62 preferably no more
30 than one inch from point 61. Since the hand can grip the head
close to the end of the throat section as far up as at least
point 61, better control of the frame can be obtained. The hand
essentially grips the frame close to where the ball rests in the

1 normal upright position of the frame. Thus use of a single hole
on each side and elimination of frame outwardly extending wing
materials below line 62 is helpful for enabling the hand to grip
the frame firmly close to where the ball rests and thus obtain
5 better ball control during handling of the head and ball.
Preferably the frame portion below line 62 has a circumference
such that the hand can comfortably and firmly wrap itself around
the frame and control the ball. This circumference is
preferably no more than five inches. Perimeters greater than
10 this can strain the grip of the hand and thus the hand can no
longer provide control in ordinary action. Of course hand size
will vary and thus the perimeter preferably lies in a range of
from four to five inches for normal usage.

The netting 20 can be conventional and of rawhide netting
15 or stringing as known in the art. The netting described in U.S.
Patent 4,138,111 for example can be used.

In the preferred embodiment, four elongated rawhide lacing
strips 40, 41, 42 and 43 are used. Only the laces 40 and 43 are
mounted in the holes 37 and 38 respectively. The inner laces 41
20 and 42 or more if more are used are wrapped about the throat as
in a loop shown at 44.

This mounting of the vertically extending lacing which
extends substantially parallel to the central axis 13 of the
frame, is desirable to enable one to increase the tension on the
25 outer laces or thongs resulting in a pocket that helps to propel
the ball more accurately and with greater velocity. Thus the
tension in the outer thongs 40 and 43 is preferably greater than
the tension with which the inner thongs such as 41 and 42 are
mounted. This feature of tensioning aids the primary feature of
30 the present invention but conventional mounting of the thongs
can be carried out while still obtaining the advantages of the
pinched in sidewall of this invention. For example in certain
cases two or more axially aligned thong mounting holes are used
on each side of the stick and the distance between 61 and 62 is

1 greater than five inches.

Turning now to the pinched in sidewall construction 15 and 16, it has long been known that accuracy and velocity of a thrown lacrosse ball is achieved by having a throwing area that
5 allows a minimum of lateral (left to right) movement of the ball so that the ball is propelled straight up and out of the pocket. Any slippage sideways in the pocket can result in diminished velocity and accuracy as the ball veers left, right, up or down depending on the throwing motion. However, it has
10 been difficult to achieve the desired pocket size staying within the guidelines of the Rules Committee and pre-existing lacrosse stick designs.

This has now been accomplished by the use of pinched in sidewalls 15 and 16. In effect there is an area covering up to
15 sixty percent of the axial length of the frame extending up from the throat and preferably from twenty to forty percent, where the sidewalls effectively form a generally rectangular inner area having a sidewall to sidewall inner dimension only a few millimeters, such as two millimeters, on either side of a ball
20 which is used. Thus the ball which may be caught and initially held in a pocket located in the upper area of the frame as shown in FIG. 1, may drop down onto a conventional resilient ball stop strip 45 and be maintained between two essentially laterally opposed sidewall portions only spaced a few millimeters from the
25 ball. The ball stop strip 45 is considered a portion of the sidewall inner surface in this discussion of spacing. This greatly adds to the ability to throw a ball with high velocity and accuracy from the frame of this invention.

In effect one obtains a generally rectangular lower portion
30 where the substantially rectangular sidewalls at the lower portion closely surround the ball. The actual spacing of the ball from the sidewalls in the upright carrying position shown in FIG. 3 can vary a few millimeters. Some spacing is preferred but any narrowing of the lower portion beyond that

1 provided by a uniform taper of the sidewalls is preferred.

The netting 20 and the pocket formed is best shown in FIGS. 1 and 2 with the mounting of the netting being accomplished through the thong holes mounting thongs 40-43 and side mounting accomplished through holes such as 50, 52 and 54 in each sidewall. The locking tabs 33-36 also act to provide for accuracy in throwing if the ball is propelled from the first or upper area of the frame.

10 In use, the ball is caught in the upper area of the frame and maneuvered to the lower area as best shown in FIG. 3. The width of the catching area remains as in a conventional head. The ball can then be accurately propelled since it is closely held within the sidewalls.

15 The sidewalls 15 and 16 are shown generally pinched in or curved slightly. That curve can be in the form of a more drastic curve or other stepped positions formed in the sidewall equivalent to the pinching in of the sidewalls. In all cases, it is desired to provide for close spacing between the sidewalls just barely allowing the ball to clear the sidewalls when being propelled.

20 While the specific embodiment of this invention has been shown and described, it should be understood that various arrangements can be made.

25 According to the method of this invention a lacrosse stick ball is caught within the frame of this invention positioned in the second area so that its lateral movement is restricted to millimeters in a direction transverse to the long axis of the ball and then propelled from the lacrosse stick in a normal swinging propelling movement of the lacrosse stick. Because of
30 the restricted lateral movement of the ball by the lower sidewall portions, velocity and accuracy of the ball is substantially enhanced.

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The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

- 1 1. A lacrosse stick solid frame comprising
said frame being elongated, encircling a net and
extending along a central elongated axis,
a lip member transverse to said central axis
5 and a throat positioned opposite to said lip member,
first and second opposed sidewall members
extending between said head and throat to form said
encircling frame,
said first and second sidewall members defining
10 therebetween a first area having a first width and a
second area positioned toward said throat and having
a width less than said first width,
said second width being selected to snugly
15 receive a lacrosse ball therebetween so as to permit
positive positioning of said ball with respect to
said sidewall member and allow improved accuracy and
velocity of lacrosse balls thrown from said frame.
- 1 2. A lacrosse stick solid frame in accordance
with claim 1 wherein said sidewall members are
pinched in toward each other to form said first and
second areas with said second area extending from
5 said throat for from 20 to 60 percent of the axial
length of said frame.
- 1 3. A lacrosse stick solid frame in accordance
with claim 2 wherein said lip member has a greater
transverse dimension than said throat.

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4. A lacrosse stick solid frame in accordance with claim 1, and further including said frame member carrying a plurality of inwardly extending lacing tabs for providing lacing supports.

5. A lacrosse stick solid frame in accordance with claim 1, and further comprising said throat carrying two thong receiving holes mounted for receiving outermost thongs positioned in a net carried by said frame.

6. A lacrosse stick solid frame in accordance with claim 2, and further including:

said head carrying a plurality of inwardly extending lacing tabs for providing lacing supports, and a plurality of thong mounting holes at said throat for mounting two outer thongs of a net carried within said head.

7. A lacrosse stick solid frame in accordance with claim 1, wherein said frame carries a net having at least four elongated thongs supporting said net, said thongs extending from head to throat with two outermost thongs having a higher tension than the innermost thongs and being mounted in holes provided in said throat and with innermost thongs wrapped about said throat.

8. A lacrosse stick solid frame in accordance with claim 2, and further comprising said lacrosse stick throat having a throat bottom point spaced from a bottom end of said frame along said axis,

said spacing along said axis at all points beyond one inch from said throat bottom being designed to enable the hand of a user to closely grip the head to obtain greater control of the head during handling and throwing of balls within the head.

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9. A lacrosse stick head in accordance with claim 8, wherein all points beyond said one inch define a perimeter no greater than five inches.

10. A lacrosse stick frame in accordance with claim 9, wherein said perimeter is from four to five inches.

11. In a lacrosse stick solid head, the improvement comprising providing pinched together sidewalls in a lacrosse frame,

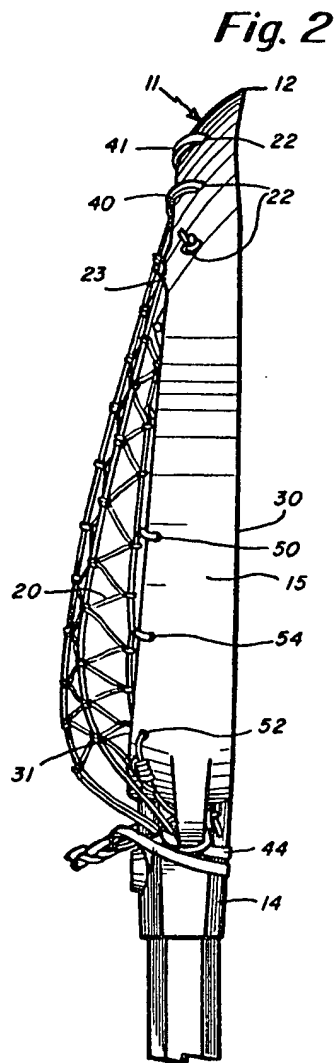
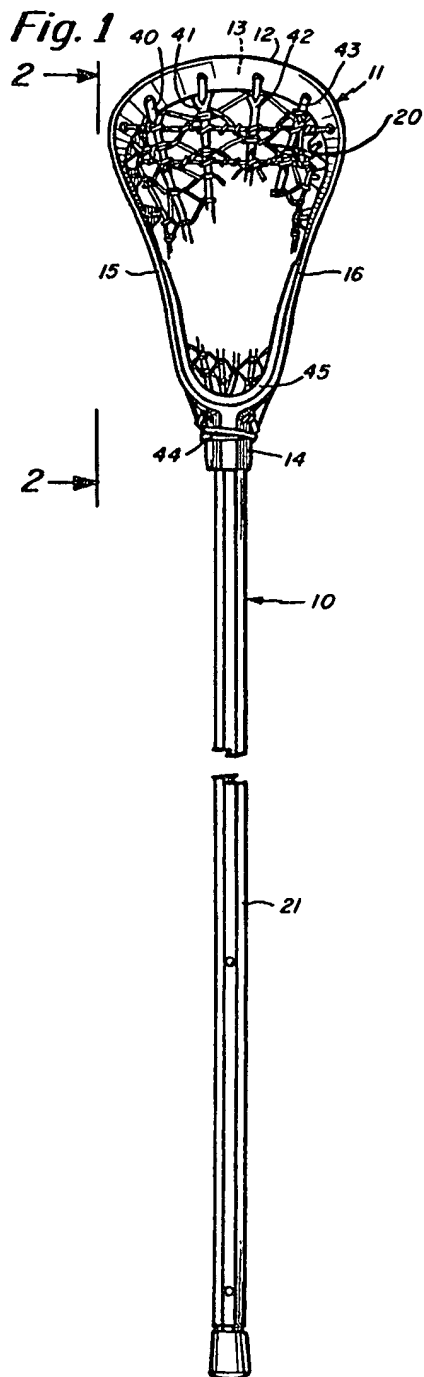
said pinched together sidewalls defining an elongated generally rectangular net area of restricted transverse dimension extending for at least 20% of the axial length of said frame but less than the whole length thereof whereby a ball may be held within said rectangular area substantially adjacent the pinched together sidewall portions and propelled along the axis of said frame with minimized lateral movement as the ball is passed out of said frame in an axial direction.

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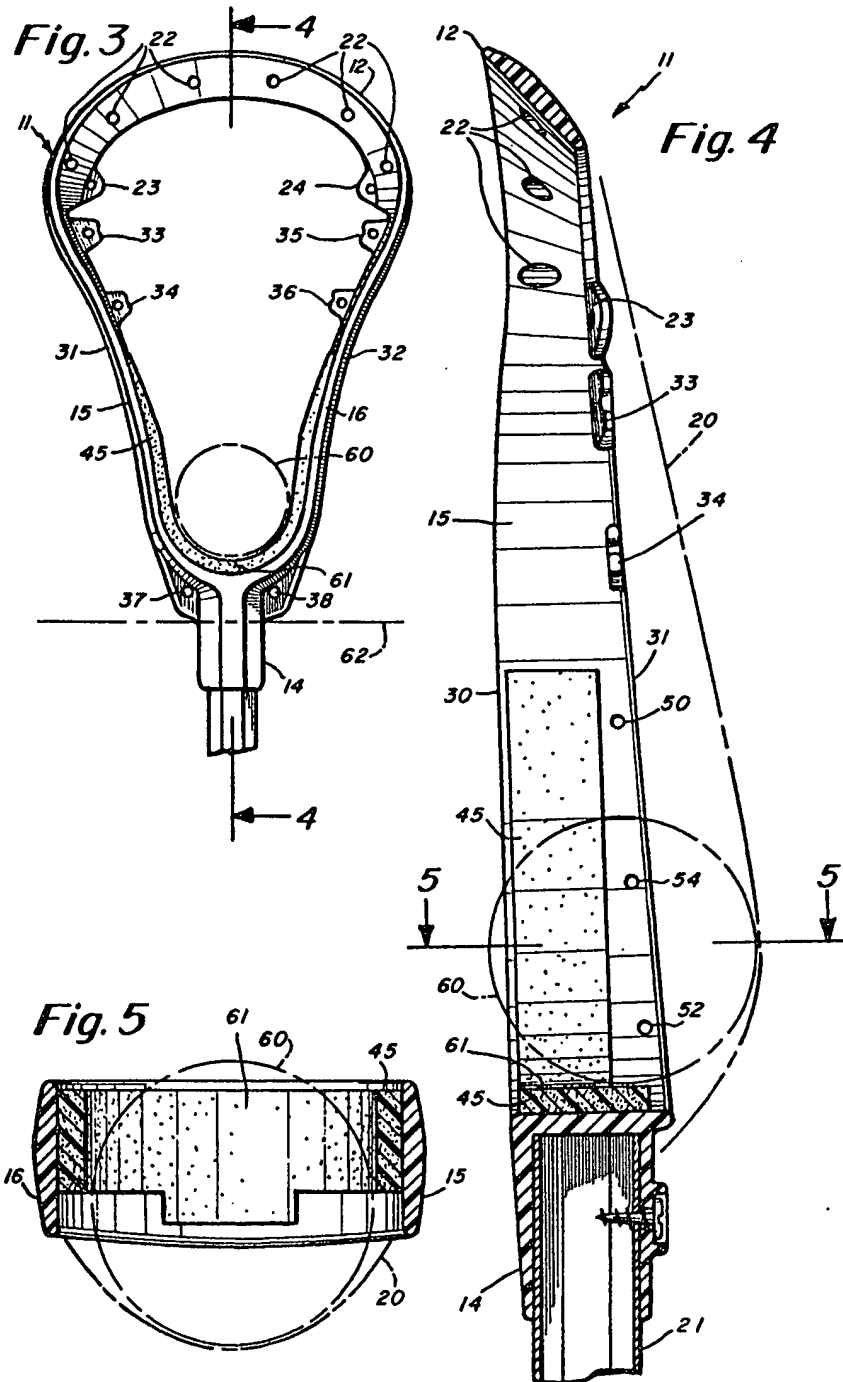
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